REMARKS

Applicants request reconsideration and review of the claims in view of the remarks herein. Applicants do not amend the claims. Claims 1-7 are pending.

The rejection under 35 U.S.C. §112, second paragraph

Claims 1-7 are rejected as being indefinite because claim 1, lines 7-11 recites a "positive and negative region," which the rejection asserts is electronically vague. Applicants traverse the rejection and submit that it clear that the positive and negative terms are not used in a strict "electronic" sense, for example, page 7, line 25 through page 8, line 22 of the specification describes what is meant by positive and negative and how "positive and negative" are translated into electronic signals. As the slit plate rotates, when light is detected through the first slit, it is considered one of the regions, e.g., positive, and when light is **not** detected through the first slit, it is considered the other region, e.g., negative. A logically high level is output when light passing through the first slit is detected, and logically low level is output when light passing through the first slit is not substantially detected. A change point (O) where the origin-return signal changes from the logical high level to the logically low level is located at only one position .... the oscillation origin. Thus, by reading the terms in context one of ordinary skill in the art will have no difficulty understanding claim 1. Applicants request the withdrawal of the rejection of claims 1-7 as being indefinite.

The rejection under 35 U.S.C. §102(b)

Applicants traverse the rejection of claims 1 and 2 as being anticipated by Herres '879. Herres '879 does not teach or suggest that the detector outputs an origin-return signal that shows different logic levels depending on whether the ultrasonic element unit is located in the positive region or the negative region, as required by claim 1. Herres '879, moreover, does not teach or suggest a control of origin return for the ultrasonic element unit to the oscillation origin, also as required by claim 1.

The rejection alleges that column 2, lines 37-67 and column 4, lines 15-54 and Figure 5 of Herres '879 teaches the claim elements above. Applicants disagree. Herres

'879 teaches that the position sensor is a rotational variable differential transformer (column 5, line 5) that generates a signal proportional to the angular position of the shaft about the axis (column 4, lines 20-21) wherein the shaft is driven by the drive motor. Herres '879 states at column 2, lines 49-67 that first, the transducer is held stationary at one of the angular positions and selected elements of an array are operated successively either individually or in groups to generate a longitudinal rectilinear scan; then the transducer oscillates back and forth through the angular positions while selected array elements are operated repeatedly at each angular position to generate a transverse sector scan. The results of the longitudinal rectilinear scan and the transverse sector scan are then combined by existing computer programs to process and display three-dimensional image data. There is simply no mention of, nor is it inherent in Herres '879 that there be, an origin-return signal. There are not two regions as Applicants claim: one positive and one negative. Herres '879, instead, talks of, e.g., one hundred twenty eight longitudinal scan planes and/or sixty four transverse scan planes.

A proportional signal output from the position sensor as taught by Herres '879 is not the same as or equivalent to an origin-return signal that shows different logic levels depending on whether the ultrasonic element unit is located in the positive region or the negative region as required in claim 1. Because Herres '879 teaches that the generated signal is proportional to the angular position of the shaft, there is no need to output an origin-return signal for a control of origin return for the ultrasonic element unit to the oscillation origin performed on the basis of the origin-return signal, also required by claim 1.

Claim 2 is allowable at least by virtue of its dependence upon claim 1. Applicants do not concede the correctness of the rejection as applicable to the claims. Applicants request the withdrawal of the rejection of claim 1 and 2 as being anticipated by Herres '879.

The rejections under 35 U.S.C. §103(a)

Applicants traverse the rejection of claims 3-5 as being obvious in view of Herres '879 in view of Miyagawa '155. Applicants do not concede the correctness of the rejection. Claims 3-5 are allowable at least by virtue of their dependence upon claim 1.

Applicants traverse because Miyagawa '155 does not cure the shortcomings of Herres '879. In short, neither Herres '879 nor Miyagawa '155 teach or suggest that the detector detects an oscillation origin and that the detector output an origin-return signal and a control of origin return for the ultrasonic element unit to the oscillation origin on the basis of the origin-return signal.

The combination of Miyagawa '155 with Herres '879, moreover, is not realizable and this is a prerequisite for a prima facie assertion of obviousness. Herres '879 teaches that the sensor elements that detect the rotation angle of the ultrasonic probe are in a linear arrangement along the axis of rotation and that only by operating in and processing the date from two modes, can an angle of rotation be calculated. Miyagawa '155 teaches an ultrasonic probe having a slit disk that rotates along the axis of rotation of the ultrasonic probe wherein the slit disk has two regions, each corresponding to half the disk, one region having a higher reflectivity than the other region. To incorporate the rotating slit disk of Miyagawa '155 onto Herres '879 would destroy the function of the array of elements and eliminate the operation of the ultrasonic probe in two modes as taught by Herres '879.

Moreover, with respect to Applicants' claimed invention and its purpose, Miyagawa '155 is a conventional ultrasonic probe wherein the rotation angle is detected by the number of light reception counts through slits in a slit plate rotating with the ultrasonic probe, *see* Applicants' specification at page 2, lines 10-16. Miyagawa '155 discusses a reference position, but states that the reference position signal need only be distinguished from the rotation angle sense signal based on the differences of frequency. Miyagawa '155, like Herres '879, is completely silent about accurately detecting an oscillator origin because neither reference recognizes the importance of accurately detecting the oscillation origin, and of having a control of origin return.

The rejection of claims 6 and 7 as being obvious over Herres '879, Miyagawa '155, and Imade '011 similarly must fall because Imade '011 does not overcome the shortcomings of Herres '879 and Miyagawa '155. Applicants do not concede the correctness of the rejection. Regardless of Imade '011 teaching a magnetization pattern and at least one magneto-resistive element in conjunction with an ultrasonic endoscope, Imade '011 still does not teach or suggest that the detector detects an oscillation origin wherein the detector outputs an origin-return signal to return the ultrasonic element unit to the oscillation origin, as in claim 1.

Conclusion

Applicants request the Examiner to allow claims 1-7 because none of the references teach or suggest the output of an origin-return signal or a control of origin return for an ultrasonic element to the oscillation origin, as in claim 1. Applicants invite the Examiner to telephone the primary attorney, Mr. Douglas P. Mueller, Reg. No. 30300 at 612.455.3804 should there remain any minor issues before the application is passed to issuance.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
P.O. Box 2902
Minneapolis, MN 55402-0902
(612) 455-3800

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By: ______________________
Douglas P. Mueller
Reg. No. 30,300
DPM/KO/ls